"A Comprehensive Web Based Student Support System for ODL Institutions of India"

Theme: Formal Education
Sub Theme: Technologies for Scaling up ODL programmes

Pankaj Khanna, Deputy Director
Indira Gandhi National Open University, New-Delhi
pk@ignou.ac.in

Dr. P.C. Basak, Professor of Management
Indira Gandhi National Open University, New-Delhi

ABSTRACT:

This paper presents an updated web system for student support services in ODL institutions of India. The infrastructure of the designed web system is composed of web server, application server, middleware, data warehouse, Internet and other networks. The most recently available versions of these electronic gazettes have been suggested to update the proposed web based student support system. In addition, the technical functionalities and associated components of the system has been structured to help users navigate easily through various support services provided by the system.

The major categories of services thus available are also discussed with a view that such a system would be quite helpful for large population of distance learners in learning their assigned courses of study. So, this system would solve to a large extent the problem of students' isolation from the faculty and other fellow student and provide time and location free access to studies.

Keywords
Open and Distance Learning Institute (ODLI), Distance Education Council (DEC), Web-browser, Internet, Student Support Services (SSS).

INTRODUCTION:

The ODL system in India, being one of the largest educational systems in the world, serves to the needs of millions of students. Presently, it comprises of 14 open universities and about 200 ODL Institutions in the country, offering distance education to about 5 million students. In the successful ODL institutions of the world, learning is taking place through the various web based educational models that can provide distance education through flexible delivery methods. The web based education can help a large student population to learn easily and successfully without commensurate increase in staffing costs. Thus, with a view to provide quality education to the distance learners, it is suggested to design an updated web system for Student Support Services in the ODL institutions *[Newman, P. & Piele, E(2002); Schroeder, C.C. (2003), Casey, D.(1998)*]. However, it is found that in most of the ODLIs in India such a web system either does not exist at all or does not cover all the major features required for providing proper Student Support Services. An appropriate web-based Student Support System is thus crucial to be established in ODL Institutions of our country.

The present paper proposes an updated web-system focussing the major categories of services to be provided for Student Support Services in ODL institutions. All the major features of student services which are necessary for updating the web-system have been included. However, the proposed web system may not be a replacement for the existing Student Support Services rather it would compliment to the existing services.

STUDENT SUPPORT SERVICES AND PROPOSED WEB SYSTEM:

The proposed comprehensive web-system for ODL institutions would prove an effective and efficient institutional mechanism to provide the required help to its learners in various academic and administrative matters of the institution. The main objective of support services would be to motivate learners, keep them on the right track and encourage them to make use of the facilities provided by the institute and above all to facilitate their learning.
The key areas of learners support services can be provided by the web-based system in an ODL institution are [*Manjulika and Reddy, 1999*] as follows:

i) Pre-enrolment Services, Pre admission Counselling and Enrolment Procedures
- Distance education Methods, Creditization and Time management and General Information regarding the institution.
- Admission schedule and Fee structure.
- Student Admission and Registration

ii) Post enrolment, Practises of Teaching and Learning
- Programme Planning and Scheduling
- Course Material and Online Content
- Personal Contact Programs
- Assignment development and preparation.
- Teleconferencing schedule and Audio-video sessions.
- Practical (Labs) schedule at Science labs, computer labs, Industry etc.
- Library and book-store services.
- Financial support (Scholarships, loans etc.)
- Career counselling and guidance including placement

iii) Course content, Curriculum and Instruction
- Course content and learning materials including digitized SLMs
- Computer managed Learning, Online Programmes.
- Delivery mode / strategy adopted for the programmes
- Communication and collaboration tools.
- System for tracking learners interaction.

iv) Learning, Counselling and Tutoring
- Advice / counselling and tutoring services.
- Schedule pertaining to personal contact programmes, distribution of self-learning materials and provision of TV programmes, radio broadcasts, and teleconferencing.
- Calendar for practical at science labs, computer labs and industry.

v) Learner Assessment and Evaluation
- Assignment evaluation (including feedback on assignment) and concerning assessment and progress.
- Learner evaluation and assessment.
- Term end examination schedules and results.

vi) Personnel and Career Counselling.

vii) Organisation of Administrative Support (including general queries and administrative problem solving)

IDENTIFICATION OF THE DESIGN GOALS FOR THE SYSTEM:

While developing the web-based system, the following objectives have been identified based on the needs and concerns of the user groups i.e. including student community of the ODL institution.

a. The system would improve access to student services. This includes time and geographic access through the World Wide Web and also methods to access non-web services or service

departments. This goal may be achieved through the use of common and cost effective technologies, such as Web-browser and Internet TCP/IP connection.

b. The system would support practices of effective teaching and learning. It includes proper distribution and access to course and program information and learning resources; integrating existing instructional and learning technologies and student services into on-line course and programs.

c. The system would improve communication and coordination between individuals while improving student-instructor and student-student communication as well as collaboration between departments which are providing student support.

d. The system would facilitate responsive and integrated student support by connecting to appropriate services based on task or need such as through the provision of search facilities to search the site and by providing a vehicle for on-line access through an easy-to-use web interface.

e. The web based system would create a flexible system infrastructure which can accommodate changes, additions and new technologies. This can be achieved by using open web standards and database standards and technologies, and creating information templates that can be filled in, edited and re-used.

Once the design goals are decided; the next step would be to identify major categories of services to be included in the system, which are discussed as follows.

CATEGORIES OF SERVICES

The various types of services which would become available based on a student's or group of student's needs:

a. User Support
b. General Institutional Information and Student Admission
c. Course content, Curriculum and Instructions
d. Learning, Counselling / Tutoring
e. Learner Assessment and Evaluation
f. Finance, facilities and other support services including help desk services.

a. **User Support:** Students and other users will need to know as to how to use the Web-system. This area of service will be tasked with:

   i. Helping users learn how to use the web-system and various applications (e.g. user help-line, enquiries, tutorials, documentation and so on).

   ii. Helping instructors, counsellors, tutors and support staff to better implement services (e.g. professional development about teaching and learning, professional development about educational technology, sharing and reflecting upon Institution projects and so on).

b. **General Institutional Information and Student Admission:** This category of service would mainly provide general information of the ODL institute required by the aspiring students who wish to get admission or by those students who have already got admission. These have been referred to as the pre-enrolment and post-enrolment information packages.

c. **Course content, Curriculum and Instruction:** These services are those directly involved with instruction at both the course and program level. The greatest strength of these services lies in the realisation that it is the people, goals, methods and effective practices of instruction and learning that are important, and not simply the technology only. In simple terms, this category of service will include:
   - Effective practices of teaching and learning.
   - Course content and learning materials.
   - Curriculum and learning resources.

- Computer managed learning.
- Communication and collaboration tools.
- System for tracking students interaction.

d. **Learning, Counselling and Tutoring:** Under this category students are provided support services to overcome learning difficulties and to achieve satisfactory academic standards. However for counselling the distance learners the various types of media adopted by the institute may include; fact-to-face, telephone, teleconferencing, answer-phone, letters, handbook, Audio/Video tape, radio, television, computer and Internet / World Wide Web (WWW). Out of these, Internet / WWW is most useful and highly suitable as it provides all the characteristics of interactivity and flexibility in education delivery and also covers both types of counselling i.e. problem solving and developmental counselling.

e. **Learner Assessment and Evaluation:** Learner assessment and evaluation is one of the most essential components of teaching learning process. Assessment is an activity which is involved in certifying the particular academic level of performance achieved by the student. So evaluation is considered as the process of assigning values to the learning outcomes of the students, during and at the end of a course.

f. **Finance and Support Services including Help Desk Services:** Information of available facilities and support services is required to be prominently displayed / flashed on the institute's website.

   'Help Desk' services would meet the various needs of students while pursuing the programme. It includes both academic and administrative support services, such as dissemination of information, counselling and tutoring services, vocational guidance, multimedia support, library services, evaluation of assignment, feedback, guidance of project work, organisation of seminars, conduct of online examinations, etc.

TECHNICAL FUNCTIONALITIES AND ASSOCIATED COMPONENTS

In the Distance Education (DE) system the students can log on to the databases of their institution and get benefited in various ways e.g. be informed about the latest activities in their institution, navigate through one information topic to another or have an online status of different topics. To accomplish all these tasks successfully and efficiently, the web-system to be developed in the ODL institutions must be provided with some specific provisions such as intelligent software agents for performing the required functions already mentioned above *[Turban, E & Aronson, J.E.(2003)]*. The following is a list of some of the technical functionalities that must be incorporated in the web-system for its satisfactory implementation and operation:

a. **Information Searching and Querying:** To traverse or navigate the web-and perform tasks such as information retrieval and discovery, validating links or HTML, Search engines (or indexing agents) such as Google, Ask.com or Hotbot may be employed, as these indexing agents are capable of carrying out a massive search of the web. However database queries through the World Wide Web (WWW) may also be considered while designing the web system.

b. **Information Publishing and Reporting:** Following may be considered for publishing and reporting:
   i. HTML / Information / PHP
   ii. "Canned" HTML reports (developed from server side script)
   iii. Documents, PDFs, PPTs

c. **Communication:** The design of web-system should be such that it is capable of carrying big databases through which tremendously large amount of information can be stored and disseminated. As such this system would work as a powerful communication medium which would facilitate online information exchange, provide information on every topic and is available to students round the clock. However it may be mentioned that the web-system designing should involve such a computer communication infrastructure which can send and receive mails (e-mails) and mailing lists.

d. **Security:** This is possibly one of the primary considerations in evaluating any technology / solution. The web-system should operate safely behind the company's firewall and secure network connections (https://) which isolates it from inappropriate and undesirable external access. Since, WWW network different computers are interlinked and data that need to be shared by different users is stored and maintained at a central storage area, so it is suggested that while designing the web-system, the technical functionalities that have to be taken into consideration for the security of the system may include are Firewalls, Encryption and Authentication etc.

e. **Technology Selection / Web Infrastructure / Servers:** The solutions should be component & module based which are to be built on leading open industry standard platforms such as J2EE (JAVA) and Dot Net (Microsoft) so that J2EE flavour of the solution can be offered on J2EE compliant Application Servers like IBM WebSphere, Sun ONE on different operating systems, along with the Dot Net version on Microsoft Windows. The selection of technology is associated with selection of electronic systems / components / Software packages needed in designing and operation of the web-system. The technology selection will include the development platform and also the development environment including language.

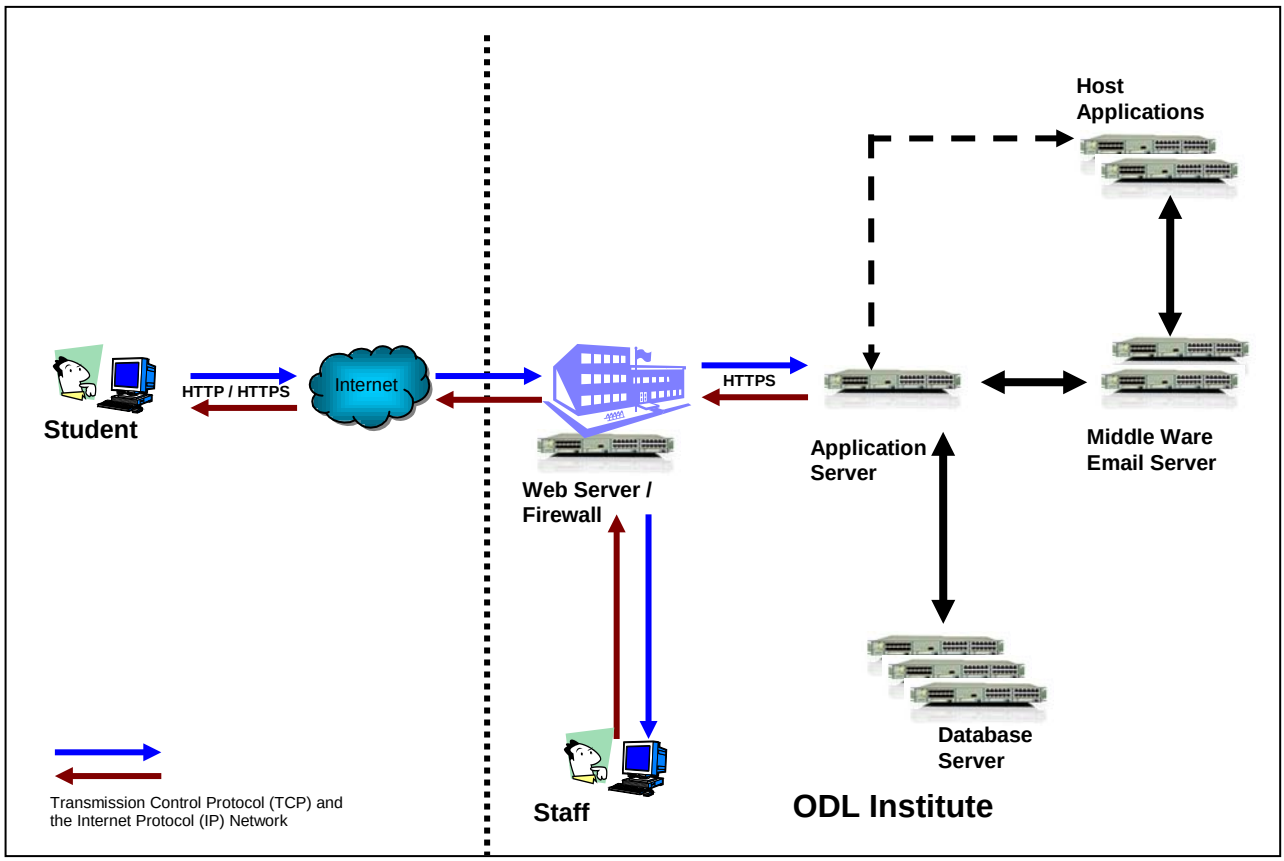

Figure 1: Web Infrastructure Architecture Diagram

WORKING PROCEDURE OF THE PROPOSED WEB-SYSTEM

The system would be developed on the World Wide Web as shown in Fig. no.1 and the ODL institute would provide the services through a web server accessing both the institute's data warehouse and potentially legacy system. The users would be able to access services through any web browser connected to the Internet.

Common web browsers available are Internet Explorer, Chrome, Mozilla and Netscape. These browsers would allow navigating in the world of Web documents also called pages. However, when the Universal Resources Locator (URL) address of the page is typed in the browser, the browser

would search the document and would make it available that on the computer screen. It may also be mentioned that the documents on the WWW are connected through links, which means that any document placed on any site can be linked to any other document placed on any other site. These documents are called pages in the jargon of WWW. Also pages have links, which are pointer to other pages in the Internet and by clicking on the links, one can travel from one page to another pointed by it. Thus, it may be mentioned that the majority of functionality would likely be implemented through HTML or PHP and an adequate web server. Most programming / scripting would be designed to run on the server side (at the institute). This would improve the cross-platform delivery capabilities (depending upon the final configuration) and reduce the amount of the data/files that a user would need to access the system.

Thus, it may be mentioned that the infrastructure of the web-system would be composed of Web server, Application Server, Middleware, Data warehouse, and Hypertext Transfer Protocol (HTTP /HTTPS) on a TCP/IP network etc, as given in Fig. no. 1.

BENEFITS OF THE COMPREHENSIVE WEB BASED STUDENT SUPPORT SYSTEM:

The users of the Web-based student support system are mainly students, faculty and staff including manager/executives of the concerned ODL institutions. The benefits of such a system to these categories of users are as follows:

a. For Students, the benefits are increased access and awareness to the student services; increased effectiveness when doing administrative tasks or meeting personal needs; more efficient use of time in connecting to student services, development of technology and self-help skills among students and above all the Web-based system would be quite convenient and easy to operate for the students.

b. For the teaching staff such as instructors, and counsellors the benefits include, increased effectiveness in linking students to student services and thereby providing student services more effectively. The other benefits include increased access and awareness to student services, efficient use of time by the institutional staff in finding out regarding services available to students. The Web-based system would also be quite convenient and easy to use for the teaching staff of the institution.

c. The benefits provided by the Web-based support system to the institutional staff of its service departments would include effective provision of student services that are responsive to student needs, easy on publishing up-to-date information, have faster communication with students and increased awareness of service model.

d. In an ODL institution, the adult learners are most important constituents. The Web-based system may be designed so as to provide increased access to student support for adult learning systems. As such there would also be potential sharing of some student support services or resources (e.g. online tutorials, services directory etc.)

The Web-based system would also help to reach the student audience and stakeholders in a more effective way, and would provide increased awareness about student services. It would also improve marketing opportunities and above all would be cost effective to develop as compared to other alternatives. As such it would provide increased student retention and improved pass out rate over time.

The establishment of the Web-based system in the institute would provide support to the institute's management with regard to planning and developing, organising and controlling, coordinating and motivating the various activities and operations pertaining to the concerned institute.

CONCLUDING REMARKS:

The proposed plan as discussed in this paper is for the establishment of web-based system for student support services in a ODL institute in India. This can be considered as a guide for existing ODL institutions and for those ODL institutions which would be established in the near future.

The establishment of the proposed web-system in each of the ODL institutions in India may help to provide quality education to distance learners in the country. However the successful implementation of such a system would need efforts by the concerned management of the institute as well as substantial support from the apex statutory organisation at national level which in this case is Distance Education Council (DEC) of India.

REFERENCES:

1. Casey, D. (1998): Learning “From” or “Through” the Web: Models of Web-Based Education, ITCSE, Dublin, Ireland; pp.51-54.

2. Manjulika, S and Reddy, V.V. (1999) *Unexplored Dimensions of Open Universities*, Vikas Publishing House Pvt. Ltd., New Delhi.

3. Newman, P.; & Peile, E. (2002) *Valuing learners’ experience and supporting further growth: Educational models to help experienced adult learner in medicine*, BMJ, 325, 200-202.

4. Schroeder, C.C. (2003) *Supporting the new students in higher education today*, Change, 55-58.

5. Turban, E and Aronson, J.E. (2003): *Decision Support Systems and Intelligent Systems*, Pearson Education Pvt. Ltd.